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## PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT : PETERSON et al.  
SERIAL NO : 09/696,600  
FILED : October 25, 2000  
TITLE : METHODS AND MATERIALS TO INDUCE RECOMBINATION IN  
PLANTS  
Grp./A.U. : 1638  
Examiner : MENTA, Ashwin D.  
Conf. No. : 6794  
Docket No. : P004716US2

## DECLARATION OF UNDER 37 CFR §1.131

Assistant Commissioner for Patents  
Washington, D.C.

I, Yongli Xiao, declare and say:

A. Purpose of Declaration

1. That I am a named inventor for the above-identified application.
2. That this declaration is to establish conception of the invention in this application in the United States prior to July 1997, the publishing date of the cited reference Shalev et al. "The Maize Transposable Element Ac Induces Recombination Between the Donor Site and an Homologous Ectopic Sequence," *Genetics*, Vol. 146, pages 1143-51, that was cited by the Examiner in the Office Action of August 13, 2004.

B. Facts and Documentary Evidence

3. That to establish this conception, the following attached documents are submitted as evidence:

(a) Exhibit A: Reproduction of page 36 from Xiao's lab notebook showing the conception of a vector to be employed in homologous recombination in *Arabidopsis* and employed for designing a PCR probe for detection of the GUS gene. The dates have been redacted.

4. That from this document, all of which were in existence prior to July 1997, it can be seen that the invention in this application was at least conceived prior to the date of July 1997, a date earlier than the effective publication date of the reference. Dates on the documents have been redacted.

5. That to establish reduction to practice, the following attached documents are submitted as evidence:

- (a) Exhibit B: Reproduction of page 61 from Xiao's lab notebook. (1 page).
- (b) Exhibit C: Reproduction of page 76 from Xiao's lab notebook. (1 page).
- (c) Exhibit D: A reproduction of the Intellectual Property Disclosure & Record statement to the assignee (5 pages). Exhibit D shows the inventors, title of the invention/creation, that invention was reduced to practice, a brief description of the invention, commercial uses, and prior art, and a preliminary write up of results.
- (d) Exhibit E: Reproduction of page 84 from Xiao's lab notebook. (1 page).
- (e) Exhibit F: Reproduction of page 88 from Xiao's lab notebook. (1 page).

6. That specifically, the documents of Exhibit A establishes conception and Exhibits B-F establish the reduction to practice of the invention as described and claimed in the application:

- (a) Exhibit A shows that prior to July 1997, the effective publication date of the prior art reference Shalev et al., a construct containing a Ds element inserted between

two partially overlapping non-functional segments of the glucuronidase gene5 (GUS) was developed.

C. Diligence

7. That from the time of this conception prior to July 1997, a time just prior to the effective publication date of the reference to the filing of Applicant's provisional application Serial No. 60/069,057, Applicants diligently moved towards a method to induce homologous recombination of a nucleotide sequence in a recombinant construct within a plant, and expressing a transposase within the plant, so as to induce homologous recombination in said recombination construct within said plant
8. That Exhibit B is a reproduction of page 61 of lab notebook entries of PCR results entered in mid October of 1997. The PCR analysis was employed using DNA from plants containing the GU-Ds-US construct together with Ac transposase as template with primers that amplify the GUS gene to determine whether recombination in plants had occurred. Exhibit B also shows that homolgous recombination of the GUS gene was successful as evidenced by Inventor's statement "got blue spots" referring to positive results from staining assays.
9. That Exhibit C is a reproduction of page 76 of lab notebook entries entered in late November of 1997 that shows that plants were assayed for recombination events by determining those plants that stained blue and photographing the results as evidenced by the Inventor's statement "took another roll of pictures in Phil's lab".
10. That Exhibit D is a reproduction of the Intellectual Property Disclosure & Record statement to the assignee received by the Iowa State Research Foundation November 3, 1997. Exhibit D shows the inventors, title of the invention/creation, that invention was reduced to

practice, a brief description of the invention, commercial uses, and prior art, and a preliminary write up of results.

11. That Exhibit E is a reproduction of page 84 of lab notebook entries entered in early December of 1997 that shows that DNA from plants containing the GU-Ds-US construct together with Ac transposase was isolated, purified, and sequenced by the DNA Sequence and Synthesis Facility to verify if the correct recombinant GUS product was produced by homologous recombination.
12. That Exhibit F is a reproduction of page 88 of lab notebook entries entered in mid December of 1997 that shows that plants obtained by crossing CS8437 (Arabidopsis carrying an Ac transposon) with DS 15 (Arabidopsis transformed with GU-Ds-US) were subjected to staining to determine if homologous recombination resulted in a functional GUS gene as evidenced by "blue spots".
13. That work continued on the method of inducing homologous recombination up to a time shortly before filing of the provisional application Serial No. 60/069,057 on December 10, 1997.
14. That the undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date

02/10/2005

  
Yongli Xiao, Ph.D.

February 16, 2005

Date

T. A. Peterson, Ph.D.

Thomas A. Peterson, Ph.D.